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ABSTRACT

To determine whether teachers with specialized training in gifted/talented education perceive and provide for the needs of the gifted/talented student differently than teachers without specialized training, educators with varying degrees of experience responded to scenarios developed from actual case histories of students in a gifted program. The format of the instrument encouraged a response to open-ended tasks. Teachers were divided into experts and novices (with and without teaching experience). In a categorical analysis of responses to five scenarios, there appeared to be a task performance difference between experts and novices. Part of the difference was observed to be based upon use of differing organizational schema. The experts took almost four times longer to read the scenario before starting to write a solution statement and used almost twice as many words as did either group of novices. (CL)

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"DO EXPERT TEACHERS EXIST IN GIFTED EDUCATION?"

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"DO EXPERT TEACHERS EXIST IN GIFTED EDUCATION?"

ABSTRACT

In light of the fact that teaching is a very complex process and that gifted/talented students are known for offering teachers a challenge, it seemed necessary to have this study determine if teachers with specialized training in the area of gifted education perceived and provided for such students differently than teachers without specialized training. The data was collected by having educators with varying degrees of training respond to scenarios developed from actual cases histories of students in a gifted program. The findings using an "expert-novice approach" indicate that there are definite differences which are observable and can easily be integrated into a teacher training program.

INTRODUCTION

In any society, educational institutions are responsible for the transmission of the values of the society. In our American society, the teacher is the individual who has that responsibility in our schools. What a tremendous undertaking! As Dunkin and Biddle so aptly stated, "....teaching is an extraordinarily complex task (1974, p. 18.)" Consequently, it should not be surprising that in the area of research on teaching, much thought is given to components of the process which determines teacher effectiveness.

Of specific concern in this study, is the issue of teaching gifted/talented students. One of the critical issues facing American schools is expressed in the question, "What shall be done for the gifted/talented students (Cordasco, 1976, p. 142)?" A related question involves the value of specialized training for teachers in order that they may more effectively address the unique learning needs of the gifted/talented student.

Consequently, the purpose of this study is to determine if teachers with specialized training in the area of gifted/talented education perceive and provide for the needs of the gifted/talented student differently than the teacher without specialized training.

REVIEW OF LITERATURE

Historically, research on teaching begins by documenting characteristics and behaviors of effective teachers. Currently, the trend

is to study student-teacher interactions and related processes. Thus, investigation of such topics as instructional time, time-on-task and actual learning time has been pursued (Medley, 1979; Berliner, 1979; Dunkin & Biddle, 1974).

A review of the literature indicates that studies on teacher effectiveness in the area of gifted education focused on characteristics of teachers who have been judged as being successful in working with gifted/talented students. Such data have been summarized from questionnaires and interviews completed by teachers, students and parents (Bishop, 1975; Whitmore, 1980; Gowan & Bruch, 1967; Sellin & Birch, 1981). Reference is also made to such teacher qualities and attributes as an understanding of self, an understanding of giftedness, an ability to provide students with a challenge, a concern for the process of learning, etc. (Nelson & Cleland, 1975; Whitmore, 1980).

Even though research on teacher effectiveness in the area of gifted/talented has not gone any further, Whitmore states: "It does not appear to be true that any 'good' teacher can effectively teach gifted children. In fact, 'good' teachers who are unprepared to teach gifted students may not only be ineffective with them, but may also become primary contributors to the development of underachievement behavior and negative attitudes (1980, p. 400)." Thus, the need for further investigation of the issue of teacher effectiveness and gifted/talented education appears to be blatant.

Pursuit of such an investigation raises a major question. Is special preparation of teachers who are to teach gifted/talented learners a factor in how they approach the teacher-learner process? This question will be answered by evaluating differences between expert educators who have had special training in the area of gifted/talented education with novice educators who have had no special training.

In studying the teaching of gifted/talented students from the perspective of experts and novices, it became evident that emphasis needed to be placed on the thought process involved in designing program plans for use with such students. When Krishnmurti discussed teaching and learning, he stated, "I wonder if all of us understand the importance of the role of thinking? Is thought important, and at what level is it important (1974, p. 141)?"

Specifically, the notion of comparing the problem solving strategies employed by experts and novices has been successfully explored in the areas of physics, chess and architecture. In order for this technique to be used in this study, several questions needed to be asked which could elicit empirical responses. Such questions included: "(1) How does task performance differ between experts and novices? (2) How is the knowledge base between skilled and less-skilled individuals structured differently? (3) How does the organization of the knowledge base contribute to the performance observed in experts and novices (Chi, Glasser, & Rees, 1982, p. 29)?"

In summary, because of the lack of research on teacher effective-

ness in the area of the gifted/talented, it seemed plausible that such an analysis of expert/novice data may aid educators in their identification and training of teachers to work more effectively with our gifted/talented students. Therefore, it was predicted that the experts would perceive each gifted/talented student as an individual with different needs, abilities and interests. It was also anticipated that the experts would spend more time addressing the unique differences of each gifted/talented student.

METHOD

SUBJECTS

The subjects were categorized according to experts and novices. The experts had special training in the area of gifted/talented education. Such training consisted of workshops and college/university courses.

The teaching experience of the five experts ranged from a practicum experience with gifted students to 10 years of experience in various teaching roles, inclusive of teaching gifted students. In addition, each was either enrolled in a masters degree program in gifted, possessed a masters degree in education or was in a doctoral program in gifted education. The mean number of workshops they had taken was seven and the mean number of special courses relating to gifted education was five.

Five of the novices who participated in the study were enrolled in a university pre-service training course in education. None had

attended any workshops relating to gifted education and/or had enrolled in any courses targeting the needs of gifted/talented students.

The other group of five novices had completed a course of training in teacher education and had been teaching at the elementary school level for 1 - 10 years. None had participated in workshops or in courses addressing the needs of the gifted/talented student.

DESIGN

This study employs a group design which uses an inferential statistical analysis and a descriptive analysis in assessing the strategies used by the experts and novices in their responses to five scenarios depicting different gifted/talented students. Specific questions being considered were: (1) Is the scenario considered to be a problem in terms of strategies used to make program recommendations? (2) Is there a difference in solution time between experts and novices? (3) Are there quantifiable differences in the written responses given to each scenario? (4) Is there a difference in how experts and novices process solutions to the scenarios?

INSTRUMENTS

Five scenarios were developed by the author based upon available biographical data on five very different students who have been placed in a gifted/talented program. Each student had met criteria on an identification matrix which qualified each for program placement.

The format of the instrument encouraged a response to an open-

ended task by asking, "If you were serving as a consultant to the regular classroom teacher, for each student, what would you identify as areas to be developed and the strategies you would recommend." In addition, the experts and novices were asked to record their times for starting the reading and writing sections of each scenario. There was no time limit placed on the task.

PROCEDURE

The scenarios were given to each subject and the introduction and instructions were reviewed. The author emphasized in the instructions that, "Each of the five students described have met criteria on an identification matrix for placement in a program serving gifted/talented students." This emphasis prevented the respondents from wasting time debating whether the student was or was not gifted. As well, no time limit was placed upon any of the individuals responding to the instrument.

The author conducted follow-up interviews of an expert and of a novice in a pre-service training course in order to gain greater insights into the processing of thoughts during the "solving stage" of the response. This was perceived as necessary in determining where differences occur between each set of subjects.

To evaluate the significance in the time differences found on each task, an analysis of variance (ANOVA) was used ($p=.05$). If a significance was found, a Tukey Post Hoc Test of comparison was calculated at the .05 level of significance.

RESULTS

For this project, the groups of subjects were designated as follows: (1) novices in a pre-service teacher training program (Novice-PS), (2) novices with teaching experience (Novice-TE), and (3) the experts (E). The elapsed time from when the subject started to read the scenario until he/she started to write a solution to the scenario was defined as "Read Time." The time between which the subject started to write his/her solution to the scenario until the time he/she started to read the subsequent scenario was defined as "Write Time."

As illustrated in Table 1, the mean Read Times were 2.64 for Novice-PS, 2.96 for Novice-TE and 9.84 for Experts. This is a ratio of 3.7:1 for Experts to Novices. For mean Write Times, and for Total Task Time, the ratio was 1.6:1 for Experts to Novices.

TABLE 1.

The Read Time data were submitted to a 3(Group) X 1(Read Time) ANOVA. This analysis produced a significant main effect of Group ($F=5.07$, $df=2,12$; $p=.05$) and a subsequent analysis of mean differences using the Tukey procedure revealed that the Experts were significantly different from both novice groups ($P<.05$). As expected, however, there were no differences between novice groups.

DESCRIPTIVE ANALYSIS

A descriptive analysis of the information collected resulted in a categorical classification of all responses which is outlined in Table 3. Each response was sorted according to its similarity to other responses given on each of the five scenarios. Each group of sorted responses were then categorized as (1) Allocation of Responsibility for Learning, (2) Depth of Suggested Activities, (3) General Organizational Schema, (4) Programming of Academic Subjects, (5) Perception of the Learning Environment, and (6) Type of Suggested Activities. There was a marked difference in the responses given by both groups of novices compared to the descriptions written by the experts for categories one through six. The differences were not as distinct in category #7, Consideration Given to Student's Expressed Interests and category #8, Programming of Non-academic Interests, but they were still evident.

TABLE 2.

For category #1, Allocation of Responsibility for Learning, the experts consistently encouraged the student to take initiative in pursuit of developing their interest and abilities. In contrast, the novices tended to assume responsibility for the student's learning. For example, the expert would state, "Encourage Mark's creative ability by involving his interest in drawing, designing buildings and

models, cooking and photography." The novice would state, "....recommend that the teacher introduce new subjects for Mark...."

In category #2, Depth of Suggested Activities, the experts were more likely to go beyond the given information in the scenario by stating, "I would suggest flexibility in the classroom to allow Mark to pursue a scientific or math interest after he has completed assigned work." The novices were more likely to parrot information by making statements like, "It seems Mark is interested in math, science...."

An intriguing category which was critical to the study was #3, General Organizational Schema. The experts consistently used an organizational format to present their solutions to the scenario, e.g. outline of content areas and/or strategies to be used. This was a rare response for either group of novices.

In category #4, Programming of Academic Subjects, the experts more readily recognized the need to employ such techniques as mastery learning, compacting, advance placement and/or acceleration of regular curriculum in order to reduce the redundancy and boredom that frequently occurs for the gifted/talented student in the regular classroom. For example, in Scenario #2, where Kenneth is described as a student scoring in the 99th percentile in all major areas, an educator should recognize a need for further assessment and individualization of appropriate content areas. This notion did not surface in any of the responses given by either group of novices.

Another category producing differences was #5, Perception of the Learning Environment. For example, the following statement reflects a typical novice response: "....since she (Renee) enjoys humor and drawing, I would like to see her incorporate this into her academic learning." On the other hand, the experts were more likely to have Renee develop her creative abilities by "working with a mentor" and "entering 'junior author' competitions and attend book signings of some authors when they are held locally."

The Type of Suggested Activities as noted in category #6 also resulted in interesting differences. For example, both groups of novices made more general statements such as, "He (Kenneth) should be allowed to pursue all areas of his interests...." or "His (Kenneth's) interests in math and science should also be developed." The experts were more specific in their recommendations for Kenneth when stating, "Explore career interests in computer science," and "because of Kenneth's career interest in computer science, opportunities to use the computer in math-related activities should be encouraged."

Slightly less marked differences were observed in categories #7 and #8. In the area of Consideration Given to Student's Expressed Interests, the stimulus for differing responses occurred in Scenario #2 and Kenneth's expressed interest in becoming a professional soccer player. The experts recognized the need to encourage Kenneth to explore that as a career interest. Conversely, the novices would either ignore the stimulus or state, "The fact that he (Kenneth) hopes to be

a computer scientist or a soccer player does not mean very much."

The differences in the area of Programming of Non-academic Interests was reflective of flexibility in thought and programming. It was not unusual for either of the groups to encourage the development of creative abilities in traditional academic areas. The difference was observed in the encouragement by the experts of such unique abilities outside the academic setting. For example, in developing recommendations for Paula in Scenario #4, one expert state, "Paula's creative and leadership qualities and skills should be utilized frequently in class activities. This could be in the form of writing and directing plays based on curriculum content....If there are opportunities in amateur acting for children within the community, she should try out for parts."

Scenario #1.

Tables 1 and 2 portray results describing responses given to various scenarios by both novices and experts. In Table 3, the nature of the responses to Scenario #1 is displayed. Experts gave 17 different categorical suggestions for developing Mark's program while Novices-PS and Novices-TE gave 10 and 8 suggestions respectively. An analysis of the length of responses shows that the mean number of words for Experts was 202.6, for Novices-PS was 136.4 and for Novices-TE was 85.6 words. Thus, it was found that the Experts not only had

more ideas for addressing Mark's needs, but they also were able to describe those ideas in more detail.

TABLE 3.

In reviewing taped interviews conducted with an expert and a novice, at least two themes were observable: (1) the type of organizational schema used and (2) the search for more information in order to make more specific recommendations. In reference to the first theme, the expert demonstrated the use of a theoretical structure as a basis for recommendations to the regular classroom teacher. The novice used a general notion when viewing gifted students as individuals who should contribute to society by learning a career.

Secondly, the expert desired more specific information about each student described in each scenario in order to improve the quality of the specific recommendations made so that each more appropriately addressed the needs of the gifted students. When asked, "What would be the ideal amount of information," the expert responded, "I guess, the student in real life."

Mutuality of the differences between the expert and novice were shared when asked, "How do you think a novice and an expert differ?" Their shared perceptions which were presented independent of one another, were that the expert should (1) "have an understanding of the characteristics of gifted/talented students, (2) be able to make re-

commerdatations based upon research, theory and experience, and (3) be able to give more options and offer a variety in the type of suggestions made because of their awareness of the resources and because they are 'tuned-in' to what to look for."

DISCUSSION

The purpose of this study was to determine if experts in the area of gifted education perceive differently than novices the possible solutions for providing for gifted/talented students in the regular classroom. In a categorical analysis of responses to five scenarios, it seemed evident that there is a task performance difference between experts and novices. Part of this difference was observed to be based upon use of differing organizational schema.

One question raised in using the expert/novice approach to assess differences in generating solutions to educational problems, was that it was necessary to decide if the scenario was perceived by the subject as a problem. The interviews conducted with the expert and novice would enable us to state that they each processed solutions to a problematic situation presented in each scenario.

A second question assessed the types of quantifiable differences presented. One type was the measurement of time in which the experts took almost four times longer during Read Time before starting to write a solution statement. This is the reverse of solution times used by experts and novices in a similar study conducted using physics problems. A second quantifiable measure involved the length of re-

sponses. In that case, experts used almost twice as many words as did either group of novices.

In summary, educators should find the results of this study encouraging and exciting as there are definitely observable and measurable differences between experts and novices in the area of gifted education. Such results have implications for training teachers to work effectively with gifted students, e.g. designing in-depth activities, train in how to use different theoretical structures, programming of academic subjects, etc.

In addition, certainly the generalizability of the notion of expert educators needs to be investigated further. Such investigations may be supportive to the current studies being conducted in the area of student-teacher interactions and related processes.

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Table 1. Mean Differences In Performance Times

Group	N	$\bar{X}$ Read Time	$\bar{X}$ Write Time	$\bar{X}$ Total Task Time
Novice-PS	5	2.64 minutes	8.82 minutes	46.88 minutes
Novice-TE	5	2.96 minutes	6.20 minutes	39.60 minutes
Experts	5	9.84 minutes	13.75 minutes	76.60 minutes

Table 2. Analyzing Differences in Responses to Scenarios

Category	Characteristics of Novice Responses	Characteristics of Expert Responses
1. Allocation of Responsibility for Learning	Teacher initiated and oriented.	Student initiated and oriented.
2. Depth of Suggested Activities	Tends to parrot the obvious described in the scenario.	Goes beyond the given of the scenario.
3. General Organizational Schema	Responses are spontaneous and ideas less tied together.	Uses theoretical base to organize recommendations.
4. Programming of Academic Subjects	Generally ignored the need for individualizing regular academic subjects.	Emphasizes using such alternatives as mastery learning, compacting, advance placement, and acceleration.
5. Perception of the Learning Environment	Focuses upon the resources available generally within the classrooms and sometimes extends to include the total school setting.	Focuses upon the community and its resources.
6. Type of Suggested Activities.	More general.	More specific.
7. Consideration Given to Student's Expressed Interests	Will tend to mold to fit the regular school program.	Takes seriously a student's interest and will give suggestions for expanding that interest even outside the regular school program.
8. Programming of Non-Academic Interests	Tends to apply such areas to academic topics only.	Will tie non-academic topics in with academic topics as well as extend such interests independently.

Scenario #1

Time Started Reading: _____

Mark is a very active 8 yr. old who is in the 3rd grade at John's Elementary School. Mark is the type of student who has an expansive breadth of interests which he thoroughly enjoys sharing with other students and his teacher.

Academically, Mark particularly likes mathematics, reading stories about adventure, humor and history. In addition, working on the computer and doing science experiments has a special intrigue for Mark. An accurate assessment of Mark's academic performance is effected by a bilateral severe to profound hearing loss. However, on the Performance Scale of the Wechsler Intelligence Scale for Children, he scored in the superior range. This was also supported by performance on the Arthur Adaptation of the Leiter Scale.

Mark's inquisitiveness helps in the cultivation of his interests in drawing pictures and designing buildings and models. Such curiosity is not only observed at school, but also at home where he pursues his interests in tennis, cooking and photography.

Your recommendations: Time Started Writing: _____

Table 3. Describing the Nature of the Responses to Scenario #1.

Group	No. of Different Categorical Programming Alternatives to Scenario #1	Length of Responses Mean # of Words
Novice-PS	10	136.4 words
Novice-TE	8	85.6 words
Expert	17	202.6 words